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On the tame Sheep and Goats of the sub-Himálayas and of Tibet.

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Zoologists, seeking to deduce the essential characters of species and genera, very properly give an unlimited preference to wild over domesticated animals, as exemplars of their several kinds. But in an œconomical point of view, the world at large as properly feels a higher interest in the tame species, and particularly in those herds and flocks, which contribute so largely to the food and clothing of mankind. England stands pre-eminent in Europe for the attention paid, not only to the breeding, but to the describing, of her domesticated animals, being fully aware that accurate book lore is always apt to be subservient in various unexpected ways to practical utility. It is, therefore, somewhat surprising, that the widely diffused colonists of England, have not imitated the excellent example of their compatriots at home, and that the herds and flocks by which Britons are surrounded in the colonies of the empire, yet remain almost wholly undescribed.

I trust that this reproach to the colonial residents may ere long be wiped away, and that some of the many enlightened and able men, scattered over the Indian continent, from the snows to Cape Comorin, will be induced to favour the public with descriptions of the numerous breeds of large and small horned cattle, that are to be found in the various provinces of this vast country.

I purpose, on the present occasion, to describe the several breeds of tame Sheep and Goats, proper to my own vicinity ; and hereafter to give

a similar account of the large horned cattle or Bovines, that is, the tame Oxen, Buffaloes and Bisons, reared between the Tarai or skirt of the plains of India, and the trans-Himálayan plains of Tibet.

I shall begin with the sheep, and, in order to mark more distinctly the *essential characters* of each of the two groups to be now reviewed, I shall commence, in regard to each, by setting down those characters in the usual manner of Zoologists.

The tame sheep of the world at large have been supposed to retain so few of the original marks of their race, that it has been thought difficult or impossible to point out their wild progenitors. Perhaps a good deal of this difficulty has arisen from the heretofore imperfect examination of the wild races, and from the manner in which the distinctive characters of the whole of them have been lumped together to constitute a single Genus *Ovis*. In a paper recently presented to the Asiatic Society of Bengal, I have distributed the wild sheep known to me into *three* genera. And to that paper I beg to refer the curious reader, merely observing on the present occasion, that the sheep proper, typed by the wild *Argalis* of Siberia and of Tibet, exhibit the whole of the following characters, which are likewise common to all the several breeds of domesticated sheep now to be described, with the single and but very partial exception of 'horned females,' some of the following tame breeds having females, sometimes void of horns.

Genus *Ovis*.

Sheep-proper.

Horns in both sexes.

No muffle.

Eye pits large, but immoveable.

Feet pits small in all the four feet.

Inguinal glands large, with a copious secretion, but vaguely defined pit or vent.

Calcic glands or tufts, none.*

Teats two.

No odour in the males.

These animals have, for further and subordinate marks, massive angular compressed and heavily wrinkled horns, inserted proximately on the top of the head, and turned sideways almost into a perfect circle,

* For these organs see Journal Asiatic Society, above referred to.

and their flat points again more or less reverted outwards and backwards, sometimes so much as to describe a second circular curve, whereby the twist becomes spirate : also, short deer-like tails ; and, lastly, no beard nor mane. Requesting the reader to keep these general designatory marks of all true sheep in mind, I now proceed to exhibit in the particular portrait of each tame breed, the special modifications to which these primitive marks are subjected by domestication, as well as the other and more popular traits of each breed.

1. *Ovis húníá*.—The Húníá of western, and Hálúk of eastern, Tibet. This tall and graceful animal is the blackfaced or polycerate sheep of Thibet, the especial breed of that country, and one which is well known to European visitors of the western Himálayas, as the common beast of burden for the transit of the snowy region, being singularly docile and sure-footed. The Húníá is a large species, measuring 4 to $4\frac{1}{2}$ feet in length from the snout to the vent, and $2\frac{1}{2}$ to $2\frac{3}{4}$ feet in height. Head to occiput (straight) 11 to $11\frac{1}{2}$ inches. Tail only, $4\frac{1}{2}$ to $5\frac{1}{2}$ inches. Tail and wool, $6\frac{1}{2}$ to $7\frac{1}{2}$ inches. Ears $4\frac{1}{2}$ to $5\frac{1}{2}$ inches. Girth behind the shoulder 3 feet to $3\frac{1}{4}$ feet. Maximum length of the horns along the curve 18 to 20 inches, and maximum girth at their base 6 to 7 inches. Both sexes have usually horns, and the males are almost never devoid of them, the females, rarely. The horns of the Húníá are distinguished for attenuation and consequent separation at their bases. But these characters are only relative, like those of the comparative smoothness of the horns, and their higher compression as contrasted with the horns of the wild race, as well as of some of the tame ones that will follow. For the rest, the horns of the Húníá exhibit with sufficient distinctness the characters both of form and curvative proper to the wild type, being triangular, compressed, transversely wrinkled, and curving circularly to the sides so as to describe two-thirds of a perfect sphere, when their smooth flat points are again reverted outwards and sometimes backwards, and so much so as to describe a second nearly perfect circle. I have not noticed this tendency to the spiral or corkscrew twist in the wild race. It is only very imperfect in the tame, and such as it is, is the product of advanced age, very probably equally characterising the wild race in old age. The moderate-sized head of the Húníá has great depth, moderate width, and considerable attenuation to the fine oblique muzzle, which shows not the least sign of nudi-

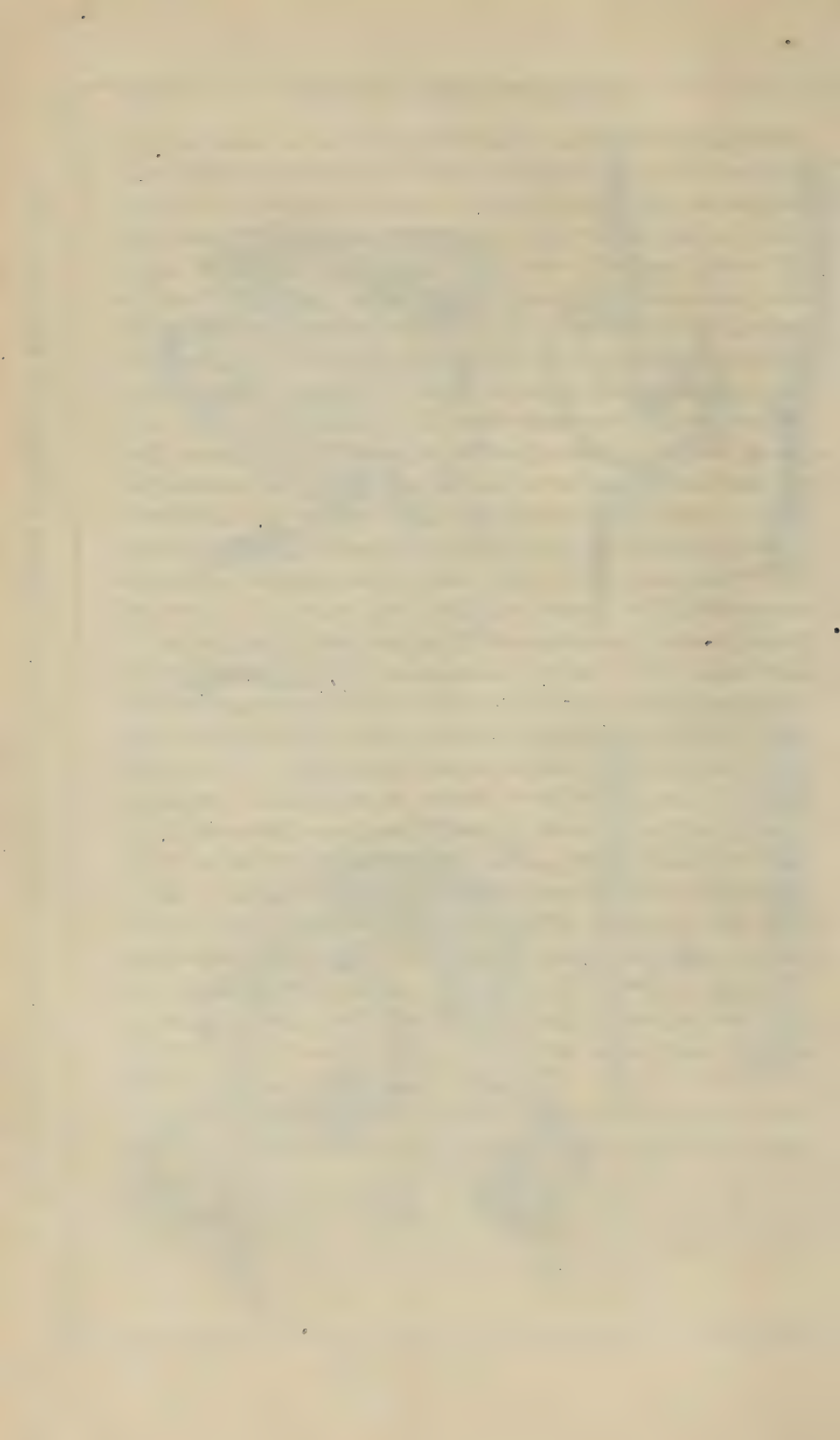
ty or moistness, and has the narrow nostrils curving laterally upwards. The chaffron, or bridge of the nose, is moderately arched or bombed, but more so than in the wild race; and the forehead is less flat and less broad than in the Argalis, being slightly arched both lengthwise and across. The longish narrow and pointed ears differ from those of the wild race, only by being partially or wholly pendent, whereas in the wild race they are erect or horizontal and much more mobile, acting efficiently like moveable funnels to catch every sound, a security denied to the several tame races, which, looking to man for their protection, seem to lose the mobility of the ear, as a consequence of disuse or less frequent and active use of the organ. The eyes, of good size and sufficient prominency of orbit, are seated near to the base of the horns and remote from the muzzle; and beneath them is the eye pit, strongly marked both in the skin and scull, and carrying off a specific secretion, though both the gland and its vent or pore are apt to escape observation, owing to the woolly coverture of the creeks prevailing throughout the eye pits, even in their interior. The neck is rather thin and short. The body moderately full and somewhat elongated. The limbs rather long and fine, hardly less so than in the wild race, and not remarkably rigid or perpendicular, except perhaps by comparison with those deer-like races. The hoofs compressed and high. The false hoofs small and obtuse. The feet pits are common to all four feet, and small only by comparison with those of Deer and Antelopes, large in comparison with those of Goats,* and provided with a distinct gland, yielding a specific secretion which is viscid and aqueous when fresh, candid when dry, and nearly void of odour. Not so the secretion of the groin glands-organs, which in the Húniá are conspicuous, and yield a greasy fetid subaqueous matter, which passes off constantly by a vaguely defined pore, quite similar to that of the axine deer, but less definite in form than in the true Antelopes; of which the Indian Black, or Sásin, offers an excellent and familiar exemplar.

The possession of these organs has been denied to the sheep by most writers. Wherefore I have been more particular in describing them; and may add, that they belong to the two wild and six tame races of these regions without exception; and may, therefore, be considered emphatically normal. Sheep are pre-eminently Alpine animals, and it

* See accompanying sketches.



1. Foot pore of Sheep. 2. Foot pore of Goats. 3. Head of Barwal. 4. of Silingia.



is, therefore, not surprising that the tame and wild breeds of the Himálayas, mountains which constitute so unrivalled a part of the "dome of the world," should be pre-eminently characteristic; nor that the same regions should, in the wild Nahoors and Barhels, exhibit samples of abnormal sheep; and such I take to be these last named Himálayan species, and likewise the wild sheep of Europe or the Moufflons; whilst the Argalis, both of Asia and of America, constitute the true type of the Ovine family.*

The tail of the Húniá is invariably short, though less remarkably so than in the Argalis, yet still retaining the same essentially deer-like character. It is cylindrico-conic and two-thirds nude below, differing little or not at all from the same organ in the several other tame races of these regions, where long-tailed sheep are never seen till you reach the open plains of India; and, as upon those plains not only are *all* the sheep long tailed, but Dumbas or montrous tailed sheep are common, whilst the latter also are totally unknown in the hills, it is a legitimate inference, that this caudal augmentation in most of its phases is an instance of degeneracy in these pre-eminently Alpine animals, and that, therefore, 'tis vain to look in the wild state for any prototype of at least the more egregious of the macropygean breeds, how great soever be the historical antiquity of the Dumbas.†

Having now described the Húniá from the tip of his nose to the end of his tail, I may conclude with his œconomic qualities, first resuming that this fine breed is characterised by extreme docility, by superior size, gracefulness of form, slender horns, of which there are frequently four, and rarely, even five, a polycerate tendency displayed by no other tame breed of these regions; and, lastly, by the almost invariable mark of a black face. The general colour is almost as invariably white. I never saw a wholly black sheep of this breed. Nor I think one with perfectly white face and legs. Both the latter parts are characteristically and almost invariably dark, black or brown, and there are patches of the same hue, occasionally, on the neck or hips: but rarely.

This genuinely Tibetan race cannot endure the rank pasture or high

* See paper above referred to in Journal Asiatic Society.

† The range of civil, as compared with physical, history, is as 5000 years to periods, the imagination can hardly cope with, though fossil Zoology gives demonstration of their reality and successive character.

temperature, or both, of the sub-Himálayas south of the Cachar; the Cachar being the juxta-nivean region of these hills, where vegetation and temperature are European and quasi Arctic. But the Húniá does very well in the Cachar, and may with care be bred, or at least fattened, in the central region at heights not under 7 to 8000 feet, where the maximum temperature in the shade is about 70°. It is a hardy animal, feeding freely and fattening kindly. Its mutton and its fleece are both excellent in quality and very abundant in quantity, so that I should suppose the animal well worthy of the attention of sheep-rearers in cold climates. The wool is of the kind called long staple, and is valued by the export at 8 pence per pound.* The Tibetans who dress entirely in woollen, are clothed almost solely from the fleece of the Húniá, an excellent material but unskilfully wrought by them into cloth, blankets, and felts, as well as knitted into long stocking boots.

2. *Ovis silingia*.—The Siling sheep or Pélúk of eastern Tibet and of Siling. Eastern Tibet is the Kham of the natives of that vast plateau and is a part of it less elevated, less rugged and less cold than the central, and yet more so than the western, portion. Towards Assam, in the valley of the Sánpú, rice is grown in Kham or eastern Tibet, a fact decisive of the high temperature of Kham, as compared with Utsang and Nari, or central and western Tibet. Indeed the plateau of Tibet descends rapidly all the way along the course of the Sánpú or Brahmáputra from its source to its gorge or exit from the Himálaya.† But still Kham must be described as a country of very moderate heat as well as of great dryness. North and east of Kham, on the verge of China, and separated from the Chinese provinces of Sifan and Shensi by the Peling mountains is Siling or Tángút, a colder and loftier region like Nari, and comprising the upper course of the Hoangho, as Nári that of the upper Bramhaputra. Siling is a country of great but vague celebrity, the Singapúr of the trade of high Asia, the cradle of the Chinese and Mantchurian families of mankind, and possibly of the

* See Journal of the Agricultural Society, Vol. V. Part IV. p. 205. I shall be happy to facilitate the procuring of the animal or its wool for an experimental Essay.

† Tibet is the vale of the Indus and Sánpú, the watershed being near the holy lakes, where the elevation is nigh 15,000 feet. At its gorge the Indus is not under 10,000. The Sánpú towards its source in Nari is above 15,000: towards its vent in Kham under 7000: in its mid-course through Utsang, a mean nearer the latter.



OVIS SILINGIA. SILING SHEEP OF TIBET.

Tibetan family also, and identical, I believe, with the *Serica regio** of the classics; and, last not least, the natal soil of a fine breed of sheep which spreading thence westerly through Kham (following probably and indicating the migrations in one route of the Scythic stock of the human race) is now common in Tibet as far as Lassa and Digarchi, whence the cis-Himálayans have imported a few samples, but rather as curiosities than for œconomic uses. The *Silingia* or sheep of Siling is nearly as common as the *Húniá* in Kham, but less so in Utsang and nearly or quite unknown in Nári, where the *Húniá* most abounds. The *Silingia* is a delicate breed, both in structure and constitution, compared with the *Húniá*, and though it will live and procreate in the Cachar, or northern region of the sub-Himálayas, it is rare there, and unknown south of it. In Nepál I procured my specimens from the Court, which imported them from Lassa: in Sikim from the Barmúkha Raja, who procured them from Kham, all parties extolling highly the unrivalled fineness of the fleece, from which the people of Siling and the Chinese located there, manufacture the *Tús* and *Málidah*, or the finest woollens known to these regions, save such as are the product of European looms. This wool has been examined by competent authority, and is declared to be of shorter staple than that of the *Húniá*, but suitable for combing, and worth in the market about the same price as the *Húniá* fleece or eight pence per pound.† Of the merits of the mutton, I cannot speak from experience. But the Tibetans and Sikimites laud the flesh as highly as they do the fleece. The animal which yields both is somewhat smaller as well as slighter make than the *Húniá*, but bears otherwise much resemblance to it and is possessed, like it, of all the essential characters of the genus, which characters, having been once explained fully, need not be repeated. Length from snout to vent $3\frac{1}{2}$ to $3\frac{3}{4}$ feet. Height 2 to $2\frac{1}{4}$ feet. Head to occiput (straight) $9\frac{1}{2}$ to 10 inches. Ears 4 to $4\frac{1}{2}$. Tail only $4\frac{1}{2}$ to 5. Tail and wool, 6. Girth behind shoulder $2\frac{1}{4}$ to $2\frac{1}{2}$ feet. Horns by the curve $1\frac{1}{2}$ feet. Their

* I have read with pleasure and profit Mr. Taylor's dissertation on the country of the Seres. But I still retain decidedly my former opinion, that the *Serica* or *Sinica regio* is Siling vel Sining vel Sering, inclusive of Kham, a country of great productiveness, greater trade (transit) and ancient and high celebrity, open to China by the Hoangho, to India by the Sánpu, and to western Asia and Europe by *all* the plateau of high Asia.

† See Journal Agri. Society loco citato.

basal girth $6\frac{1}{2}$ to $7\frac{1}{2}$ inches. The Silingia is a breed of medium size and delicate form, with head and horns and general aspect much assimilated to the Húniá. Head moderate-sized with nose considerably but not excessively arched, and somewhat slender, trigonal, compressed and wrinkled horns, curving circularly to the sides, but less tensely than in the Húniá, and the flat smooth points reverted backwards and upwards. In this breed there is even less departure from the primitive type as seen in the Argalis than there is in the Húniá; but the more lengthened ears are pendant entirely as in the latter, and the deer-like tail likewise is somewhat longer than in the wild type, being similar to that of the Húniá. The eye, feet, and groin pits, are all forthcoming and as conspicuously as in the Argalis or in the Húniá. The colour is usually white but sometimes tinged with fawn, especially upon the face and limbs; and black is perhaps less rare as a colour in this breed than in the last. The females of the Silingia are commonly horned, though hornless females are often met with. Great intestines 17 feet, small $55=72$. Cæcum 9 inches long by 3 wide. Width of small gut $\frac{5}{8}$ inch. Of large $\frac{3}{4}$. The tame sheep of Tibet (the Húniá and Silingia) rut in winter and produce young in summer, the females gestating $5\frac{1}{3}$ months. They breed but once a year and produce ordinarily one young at a birth, but frequently two. Their periods of puberty and of longevity have nothing peculiar or different from what is well known of other breeds in other realms.

3. *Ovis Barwál*.—The Barwál. This is a cis-Himálayan breed and the ordinary sheep of the Cachar or northern region of the sub-Himálayas* where immense flocks are reared by the Gúrúng tribe, in all the tracts between Júmla and Kiránt. The breed extends, as I know, from Kumaon to Sikim, and, as I conjecture, still further beyond these western and eastern limits. The Barwál is especially the breed of the northern region of the cis-Himálayas; and though its strength of constitution enables it to live pretty well in the central region, yet it is seldom bred there, and never in the southern region of the Hills, nor in the plains of India, the heat of which it probably could not endure. The Barwál is the “hero of a hundred fights,” his high courage, vigorous frame, superior size and enormous horns covering and shielding his entire forehead, rendering him more than a match for any foreign

* Bhote purganahs of Traill apud Trans. Asiatic Society.



OVIS BURUÁL. The Barwal Sheep.

or indigenous breed of sheep, and a terror even to the bulls. The Barwál in measures of extent, that is, in length and height, is inferior to the Húniá, but superior to that breed in massiveness of entire structure and in weight, and upon the whole, equal in size. Length from snout to vent $3\frac{3}{4}$ to 4 feet. Height $2\frac{1}{2}$ to $2\frac{3}{4}$ feet. Head, to jut of occiput, 11 inches of straight measure, 14 by the curve. Ears 2 to 3 inches. Tail only 7 inches. Tail and wool, 8 inches. Girth behind the shoulder $3\frac{1}{4}$ to $3\frac{1}{2}$ feet. Length of horns, along the curve, $2\frac{1}{2}$ feet. Their basal girth 13 to 14 inches.

The Barwál is singularly remarkable for his massive horns, huge Roman nose and small truncated ears. But this breed, like all the others, possesses without exception all the characteristic marks of the genus, as above defined, and none others denied to that genus, whilst the extraordinary massiveness of its horns, though a deviation from the other tame races, is a normal approximation to the wild type, leaving the high curve of the nasals or chaffron as the only anomaly of the Barwál breed in comparison with its wild prototype, and an anomaly of which the other tame races exhibit marked, though not equal, degrees. The head is large, with a small golden brown eye, a horizontal tiny and truncate ear, pressed down in the old males, by the horn, and seeming as if the end were cut off, a Roman nose such as the Iron Duke might envy, narrow oblique nostrils, showing some faint symptoms of the nude muzzle in the manner of the wild Argalis of Tibet, a short thick neck, a compact deep barrel, rather elevated strong, and perpendicular limbs supported on high short hoofs, and having largish and salient conical false hoofs, behind them, and lastly a short deer-like tail, cylindrico conic, almost entirely nude below, and reaching to about the middle of the buttock.

Both sexes have horns, not a tythe of the females being void of them, and the males scarcely ever without them. The horns are inserted without obliquity, and in contact on the crest of the frontals or top of the head which they entirely cover, and they are directed to the sides with a more or less tense and perfect circular curve, which is sometimes in old age repeated on a smaller scale; but ordinarily the spherical twist is single and leaves the flattened smooth tips of the horns directed outwards and forwards. The form of the horns is trigonal and compressed, as in the other tame and in the wild breeds; and as in the

latter especially, presents a broad surface to the front. There is less compression in the Barwál than even in the wild sheep, so that sometimes, but not usually, the breadth is in excess of the depth at the bases of the horns. The frontal aspect of the horns in the Barwál is, however, always ample, if not quite equal to the lateral aspects, and the three faces, though, in general, flat, have more or less of curvature which is usually convexed, but sometimes rather concaved on the inner lateral aspect: and the cross furrows or wrinkles of the Barwál's horns are as decided and heavy as in its wild prototype. The flesh and fleece are both very abundant but coarse, well suited to the wants of the lusty, rude and unshackled population of the Cachar, but not adapted probably for foreign exportation or exotic rearing. By far the largest number of the Ráhris or coarse blankets and serges, manufactured in the sub-Himálayas, and extensively exported therefrom for native use, in the plains of India, are made from the wool of the Barwál, which, likewise, entirely and exclusively clothes the tribes who rear it, and make the rearing of it their chief and almost sole occupation. The Gúrúngs especially are a truly shepherd, though not a nomadic, race, and they, it is principally, who breed the Barwál, feeding their immense flocks nearer the snows in the hot weather, and further off the snows in the cold weather, but never quitting their own proper habitat as well as that of their flocks, and which is the northern division of the sub-Himálayas. Coarse as is the wool of the Barwál, it is very superior to that of the sheep of the Indian plains, and being of the long stapled kind, the animal might possibly prove a valuable addition to our European stores, either for the wool or for the flesh market, the Barwál being of a hardy constitution, averse only from excessive heat, and feeding and fattening most kindly. The colour of this breed is almost invariably white: but reddish or tan legs and face are sometimes found, and it may even be said '*Rara Ovis in terris, nigroque simillima,*' of this as of the other breeds.

The seasons of rutting and breeding are winter and summer respectively: the gestation is of $5\frac{1}{3}$ months, and but once a year, pampering and high feeding alone ever causing two broods in the year, or deviation from the customary times of female amateness and of delivery, though the male be toujours prêt et beaucoup suffisant pour une troupe des dames.*

* This extreme sexual energy is sustained by proportionate organic development. I do not see how we are to reconcile it with the "fitness of things," unless many more females than males are produced,

The feet, groin and eye pits are all conspicuous in the Barwál. Intestines 121 feet; whereof the small are 94, and the great 27 feet. Cæcum $12\frac{1}{2}$ inches long, and $3\frac{1}{2}$ wide. Several inches of the gut below it, nearly as wide. Rest $2\frac{1}{2}$ to 2 inches in diameter down to anal end. Liver with two principal and five total divisions besides the lobulus and the large gall-bladder loosely attached to the largest lobe in a very partial cleft and at its lower edge.

4. *Ovis Cágia*.—The Cágó or Cágya. This is the especial breed of the central region of the sub-Himálayas, so far as that region can be said to have a breed, for, in sooth, its very rank pasture and high temperature together are very inimical to Ovine animals. There are few sheep in the central hilly region, and none in the lower, till you reach the open plain, and there is found a widely diffused breed, quite different in its superficial characters from any of the hill ones. What sheep are reared in the central region of the hills are of the Cágia breed, but rather by householders than by shepherds, and rather for their flesh than for their wool. The Cágia is a complete Barwál in miniature: yet, like as the two breeds are, each has its own region, nor does the great difference of size ever vary or disappear. Nor are there wanting other differential marks such as the full sized pointed and pendant ears of the Cágia and its shorter stapled and finer wool.

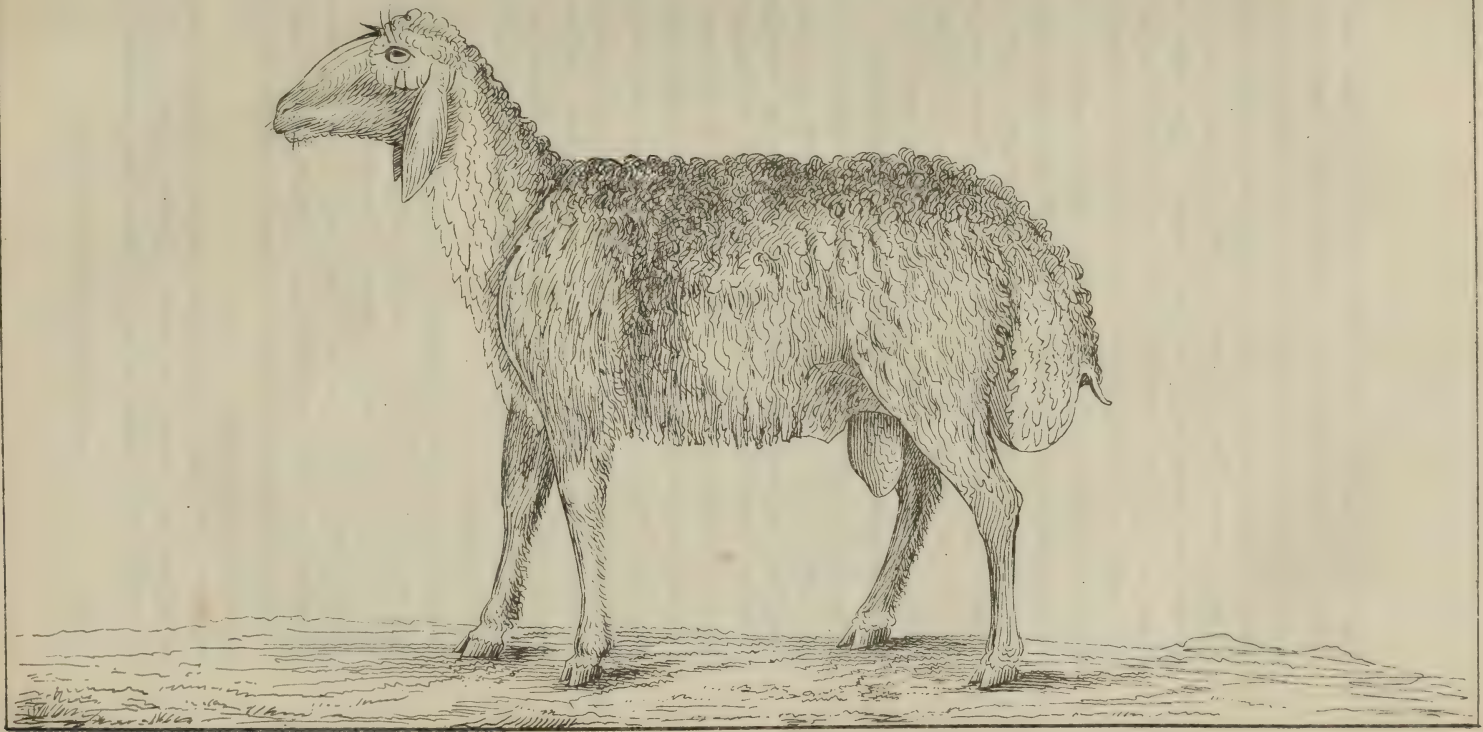
Length from snout to vent 3 to $3\frac{1}{4}$ feet. Height 2 to $2\frac{1}{4}$ feet. Head to occiput by the curve, 13 inches, straight 10 to 11 inches. Tail only, $6\frac{1}{2}$ to 7 inches. Tail and wool, $7\frac{1}{2}$ to 8 inches. Ear $4\frac{1}{4}$ to $4\frac{1}{2}$ inches. Girth behind the shoulder $2\frac{1}{2}$ to $2\frac{3}{4}$ feet.

The Cágia is a small, stout and compact breed, possessed of great strength and soundness of constitution, impatient only of heat, and that much less so than the preceding breeds, eminently docile and tractable, affording mutton of unequalled quality, and wool not to be despised, yet to be praised with more qualification than the meat. Men of rank in Nepaul, who eat mutton, always prefer that of the Cágia, which is certainly superior both for tenderness and flavour to the mutton of any other breed of sheep in these regions. The wool is of short staple but considerable fineness, though inferior much to that of Silingia, somewhat to that of the Húniá, but superior to the wool of the Barwál in fineness, though not equal to it in length of fibre. The people of the central region of the sub-Himálayas, to which region the Cágia sleep

is confined, dress almost entirely in cottons, and consequently do not much heed the fleece of their sheep. But the Newárs of Nepal-proper, where the Cágia most abounds, manufacture its wool into several stuffs, often mixed with cotton.

These manufactures, however, are sheerly domestic, and of little consideration, the products being poor and coarse, though owing more to unskilful manufacture than to the inferiority of the raw material, none of the mountain tribes east of Cashmir, possessing any portion of that high proficiency in the art of weaving, which has for ages given such celebrity to the looms of Cashmir, as of Delhi, of Benares, of Dacca and to Guzerat.

The Cágia sheep is a handsome breed, but the head is too large, the chaffron too prominent, and the legs too short for perfect beauty. The head is large, and massive: the eye small and pale: the ears longish pointed, narrow and pendant; the body full and deep; the legs short and rigidly perpendicular but fine; the tail short and deer-like, as in all the other breeds; the nose only less romanised than in the Barwál; and the massive horns only inferior in thickness to that breed. In the Cágia the horns are trigonal, very moderately compressed, heavily wrinkled, and curved circularly to the sides with a tense flexure, the flat smooth points being usually directed outwards and upwards, but in old age sometimes recurved into a second spheroid, the points still having the same direction as in case of the single spiration. Thus the Cágia is nearly as well armed for battle as the Barwál: but he is less used in that way by the rich and idle, owing to his inferior size and courage. The beautiful lambs are the constant pets of the ladies, this breed being of all the most docile, and made almost a domestic animal by the Newárs of Nepal-proper. The Cágia is confined to the central region of the hills and extends longitudinally, or west and east, from the Naraini to the Dúdh Cosi. The colour is very generally white. Some few are black or ochreous yellow, and the young are apt to be of the last hue, turning white as they grow up. The males are almost invariably horned, and the females frequently, even generally, so; but hornless females are not uncommon. Polycerate varieties seem unknown to the Cágia as to the Barwál breed, but are common in the Huniá, heard of in the Silingia breed. And here I may observe, that I have described the whole of the sheep, and shall do the goats, from *mature*



OVIS PUCCHIA. THE HINDOSTHANI DUMBA.

and perfect males, and have found nothing to remark peculiar to the females beyond the occasional absence of horns, a circumstance invariably noticed in regard to the females; though I may add, once for all, that the females all exhibit the usual inferiority of size, and that their chaffron is always straight, how much soever it be bombed in the males, another indication, by the way, that the Roman nose is an adventitious, not essential, character of the genus. Not so the eye and feet and groin pits, which are organic and essential marks, and as such are universal, the Cágia not less than the others, tame and wild, male and female, exhibiting them all conspicuously. In the same light must be regarded the two teats, though this be a structural peculiarity of wider prevalence and less invariability, serving to assemble into one group (Capridæ) the sheep of all sorts and the goats with many of the Antelopes, yet disappearing in the Hemitrages in the Thárs, Gorals, Chousinghas and others of the proper Antelopine family;* and, what is very remarkable, not absolutely constant even among the true and proper sheep; for I have more than once met with Cágias possessed of 4 teats.

This, however, is a point that must be referred to the category of "questions pour un ami" like the occasional 5 molars of the sheep; and the general reader may rest secure that sheep-proper have 6 molars and 2 teats.

The Cágia sheep ruts in spring and breeds in autumn, most of the young being born at the close of the rains, but without absolute constancy, for the domestic and artificial life of the Cágia leads to its often breeding irregularly throughout the year, and sometimes even twice in one year. One or two young are produced at a birth, and ordinarily in autumn, instances of two parturitions in one year being most rare. I have no memorandum of the intestines. The periods of maturity, decline and death, show nothing calling for note. Having now despatched the several races of tame sheep of the mountains and of Tibet. I might next describe with equal particularity the Tarai sheep, which seems to be identical with that found all over Gangetic provinces, and is characterised by medial size, black colour, a very coarse but true fleece, frequent absence of horns in one or both sexes, a nose romanised amply, very large drooping ears, and a long thick tail frequently passing into the monstrous Dúmba "bussel." But the extent to which

* See paper on the Ruminants, Journal Asiatic Society, above referred to.

my remarks, on the mountain races, have insensibly spread, warns me to return to the hills, and take up, without delay, the other branch of my subject, or the Alpine Goats. I shall therefore merely observe further of the long-tailed sheep of the Gangetic provinces or *Ovis Púchia*,* the *Púchia* of the natives, that its essential structure conforms entirely to the definition of the genus above given, whilst its deviations in subordinate points, (carefully noted above) from the wild and tame sheep of the mountains, distinctly prove the ultimate effects of domestication upon these animals to be, to augment exceedingly the size of the tail, in length and thickness, one or both, to increase the size and destroy the mobility of the ear, and to diminish the volume of the naturally massive horns until they gradually disappear in one or both sexes; the Romanising of the nose, out of all proportion to the “modesty of nature,” as seen in the wild state, being a further and hardly less uniform consequence of domestication, though *not* one which, like the others, seems to augment most under privation of the primitive mountainous abode of these animals, as well as of their liberty and of their consequent power, freely to indulge all their natural propensities. The general Zoology and *Regne Animale*,† *A notice Dúmbas* (*Ovis steatopyga*) in Tibet; but I am well assured, there are none in any part of “high Asia,” or between the Altai and *Himálaya*, the *Belut Tag* and *Péling*.

GENUS CAPRA.

Goats.

Horns in both sexes.

No mufle,

No eye pits.

Feet pits in the forefeet only, or none.

No inguinal pores nor glands.

No calcic tuft nor gland.

Mammæ two.

Odour intense in males.

A true beard in both sexes, or in the males only.

These animals are further distinguished by horns, directed rather upwards and backwards than circling sideways to the front, as in the

* *Púchia* equivalent exactly to *caudatus*, from *Púcch*, a tail.

† Vol. II. p. 390 and IV. p. 330. The *Cabul Dúmba* is polycerate. That of the plains of India differs not from the ordinary sheep, save in the fat tail.

sheep-proper, by the obliquity of their insertion on the top of the head, their less volume, greater compression, less angularity, and, above all, by the keeled character of their sharp anteaal edge. The tail of the goats is shorter and flatter than in the sheep; their chest or knees frequently bare and callous; and their hairy pelage apt to be of great and unequal lengths.

It must be remembered that the so-called wild goats of the Himálaya (Jháral or Tehr) are not goats at all; for they have four teats, a moist muzzle, and no interdigital pores or feet pits. Having premised this caution and solicited attention to the above essential and subordinate characters of the goats, I proceed to describe the several tame species of Tibet and of the sub-Himálayas.

1. *Capra Chángará*.—The Chángará. This is the common domestic goat of Tibet, a breed of moderate size, distinguished by the uniform abundance of its long flowing straight hair, which descends below the knees, and hocks, and covers pretty uniformly the whole animal. Even the legs are abundantly provided with hair, though, of course, it is shorter there than on the body, whilst the head, with its ample forelock and beard, worthy of the Shah of the Persia, shows the same tendency to copious development of pelage in this animal, which has likewise a spare sub-fleece of exceedingly fine wool. Length from snout to vent about 4 feet. Mean height 2 feet. Head to occiput, by the curve, 11 to 12 inches, straight 9 to 10 inches. Ears 5 to 6 inches. Tail only, $4\frac{1}{2}$ to $4\frac{3}{4}$. Tail and hair, 9 to 10 inches. Girth behind the shoulder, $2\frac{1}{2}$ to $2\frac{3}{4}$ feet. Horns along the curve, $1\frac{1}{4}$ to $1\frac{1}{2}$ feet. Basal girth of horns, 6 to 7 inches. The Chángará has all the independence of physiognomy and boldness of carriage; but not, perhaps, all the hardihood of the constitution, which Buffon has attributed to the whole race of goats. He is wanton, capricious, restless, impatient of strict restraint, and of docility far inferior to that of the sheep, though better able to endure change of climate, his gay roving eye bespeaking his mercurial temperament, and any attempt to handle him demonstrating his impatience of all but lax control. Ordinarily he is tractable enough; but he will not submit, like his countryman the Húniá, to carry burdens; and he may be bred and herded with facility; but he requires a large range and liberty to please himself whilst grazing.

In the dry cold plains of Tibet, which are every where varied by hills and broken ground, the Chángrá flourishes exceedingly, and also in the northern region of the cis-Himálayan mountains. He will not only live but breed in the central region of the sub-Himálayas; and with extreme care may be kept alive, but not bred, in the southern region of the hills, and even in the plains. But he merely exists in the two last named locations, and even in the central region of the mountains, he loses the fine silky sub-fleece, retaining the external hairy pelage only, and that much shorn of its "fair proportions." A Kirghis breed allied to the Chángrá, has been conveyed safely to Europe, and bred there successfully in the alpine parts of southern France; and, as both this and the Chángrá are closely allied to the celebrated shawl goat, I have no doubt that either their exquisite sub-fleece or their abundant outer coat could be turned to good account, if not immediately yet after crossing the breed with some nearer appropriate stock such as the Angola or Whidah. The natives of Tibet manufacture ropes, caps, and coarse overalls out of the long hair, and a fine woollen cloth called Tús, out of the sub-fleece, mixed occasionally with the wool of the Silingia sheep. The flesh of the Chángrá, especially of the kids, is excellent, and is much eaten by the Tibetans and cis-Himálayans, even the Hindús of the central region, importing large numbers for food and sacrifices, especially at the Dasahara, or great autumnal festival. But upon the whole, the Tibetans prefer the mutton of their sheep to that of their goats; and the former are consequently much more abundant in Tibet, and yet more so in the cis-Himálayan district of the Káchár, where alone, on this side the snows, goats or sheep flourish.

The Chángrá, as I have said, is a breed of medial size, with a fine small head full of expression, a spare and short neck, a long yet full body, short rigid limbs, and a short deer-like tail, rather shorter, more depressed and more nearly nude below, than in the sheep, and frequently carried more or less elevated especially in the males. The narrow oblique muzzle is covered with hair: the longish face and nose quite straight: the short forehead, arched both lengthwise and across, and furnished with an ample forelock: the small brownish yellow and saucy eye placed high up or near the base of the horns. The horns, which are inserted very obliquely on the top of the head, are in contact

with their antea sharp edges, but diverge towards their rounded postea faces, and curve upwards, outwards and backwards, with much divergency and with one lax spiral twist, leaving the flat smooth points directed upwards and backwards. The compression of the horns is great, so that their basal section is elliptic or rather acute conoid, and the keel is neither very distinctly separated from the body of the horns, nor does it exhibit any salient knots, but is rather blended into the lateral surfaces, and chiefly indicated by the deflexion of the wrinkles of the horns, which are numerous and crowded but not heavy, and go pretty uniformly round the horns, but form a decided angle at the commencement of the keel. The ears are longish, narrow, obtusely pointed and pendant, with very little mobility. The short strong rigid limbs are supported on high vertical hoofs, and have obtusely conic false hoofs, pretty amply developed behind them. The essential structure in these animals is perfectly conformable to the type of the genus as above defined. That is to say, they have hairy noses void of muffle; horns common to both sexes; no trace of gland or of pit below the eye or in the groin; small feet, pits confined to the fore extremities but they are distinctly marked and invariable. No gland nor tuft on the stifle; odour intense in the males; a true beard, proper to both sexes, and invariably forthcoming callosities on the knees; and, lastly, horns inserted like those of sheep on the top of the head, but cultrated to the front, not to the rear, much more obliquely set on the head, more compressed, less angular, and showing palpable evidence of the keel in that particular form which it exhibits in *Ægagrus*,—the true wild type of *Capra* or the goats proper; whereas *Ibex* is a distinct type analogous to the *Mouflons* or *Caprovis*.* In the *Chángrá* there is, in fact, hardly any deviation from the wild type, except in the large and pendant ears; so that domestication would seem to have made less impression on these animals than on the sheep, though its effects on both groups have been less oblitative than is generally supposed; and it will be seen in the sequel, that all the tame Goats of these regions conform to their assumed wild prototype, with hardly less deviation than is seen in the above careful survey of the *Chángrá*.

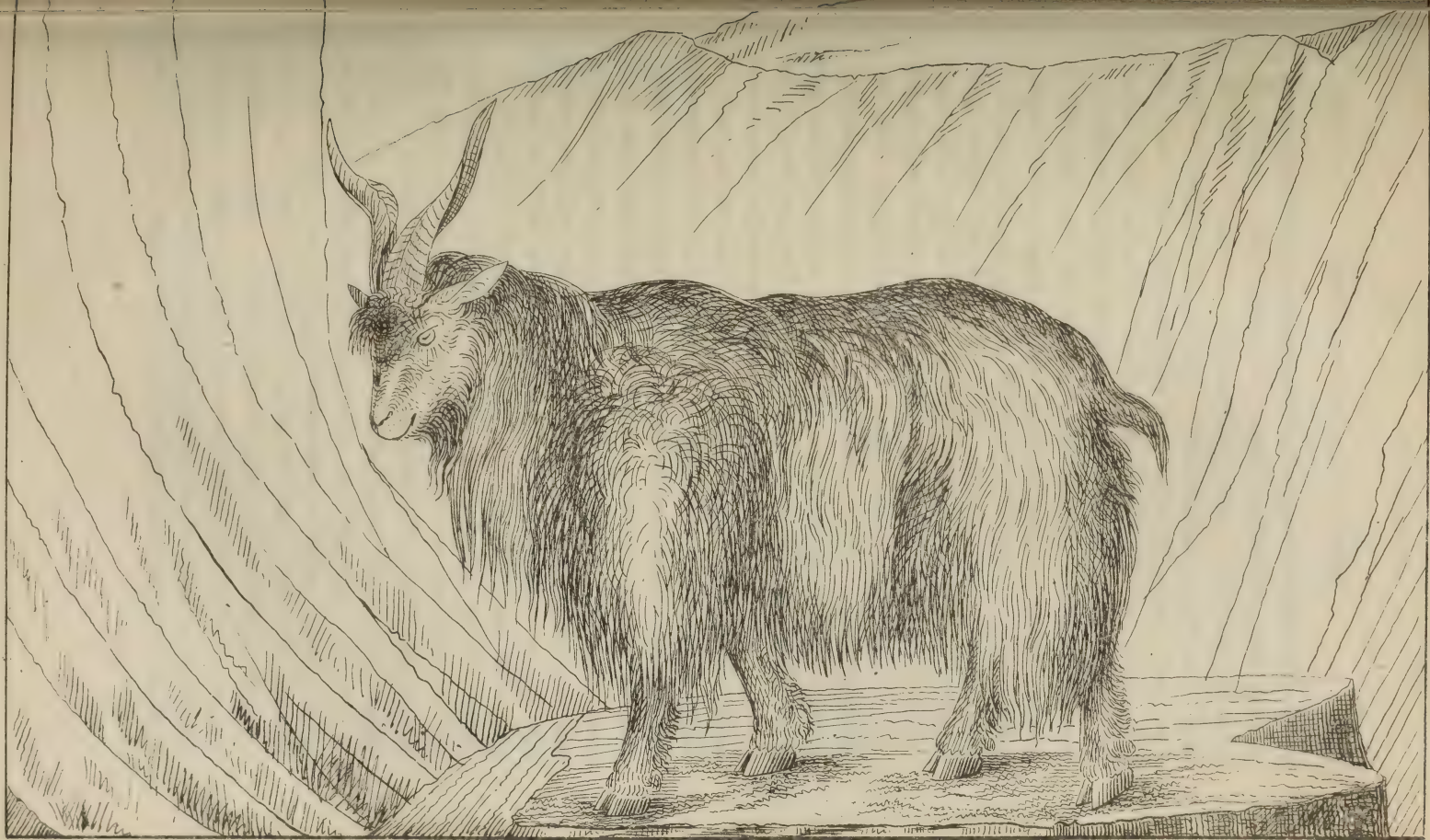
The females of the *Chángrá* are smaller than the males, and have

* See paper before adverted to in *Journal Asiatic Society*.

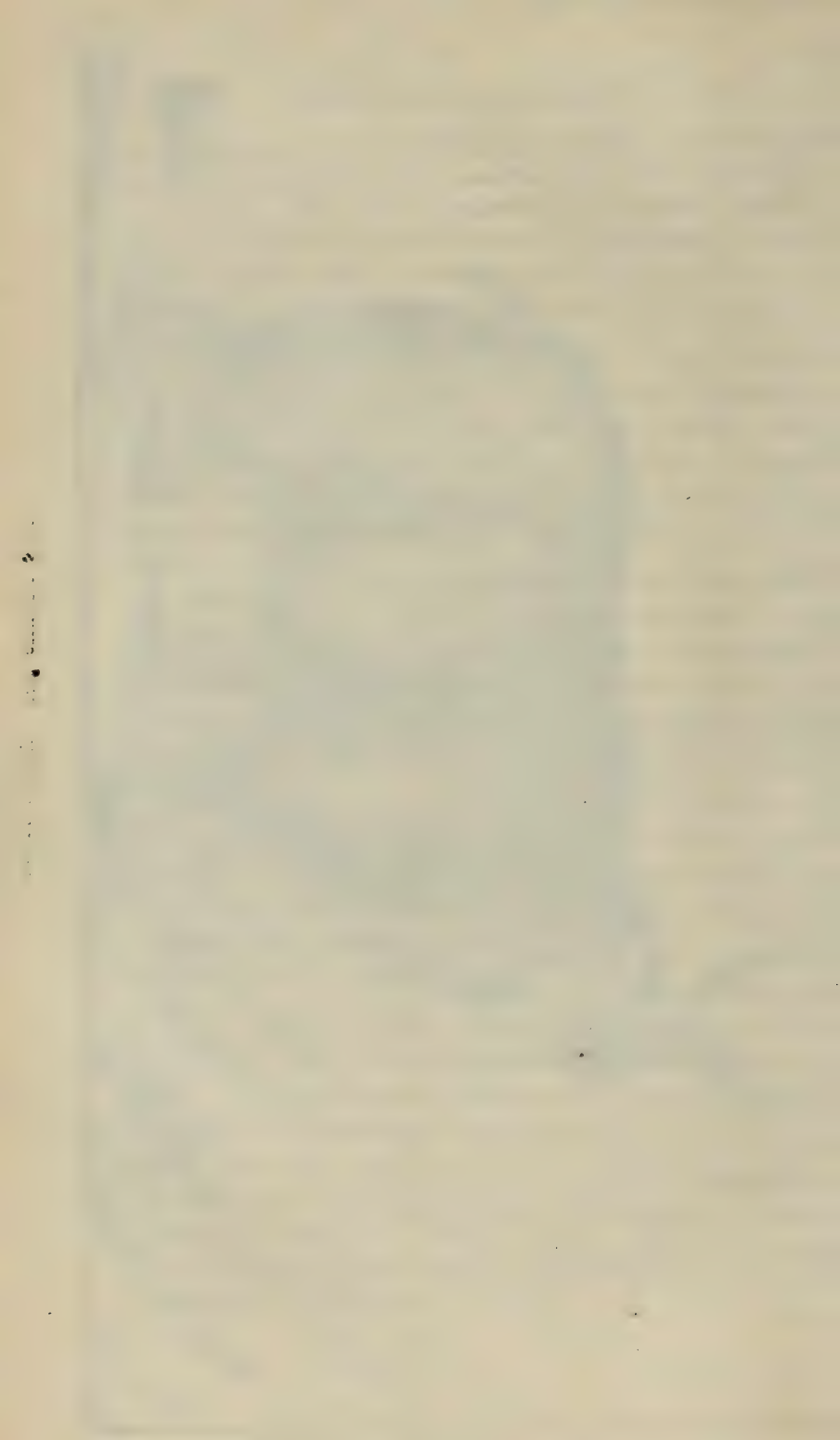
smaller horns nearly void of spiral flexure. But they are bearded, like the males, and otherwise entirely resemble them. The rutting season is early winter: the period of procreation, early summer: and the gestation of about $5\frac{1}{2}$ months, or some 10 days beyond the fifth month, as in the sheep.* One, two, very rarely three, young are produced at a birth. The females begin to breed in the first year of their age: the males to procreate in their second year. They are at their best at 8, old at 10, decrepid at 15, and seldom live beyond 15 to 20 years. I have no memorandum of their intestines. Perhaps the most general colour of the Chánggrá is white, tinged with slaty blue. But the white is seldom unmixed, and the limbs and sides of the head are apt to be dark. There are frequent dark patches on the body, and often the whole body is black or tan, the limbs only and face being white.

2. *Capra Chápú*.—The Chyápú and Chápú of the northern region of the sub-Himálayas. This breed bears the same relation to the Chánggrá as the Cágía sheep to the Barwál, that is, it is invariably of much smaller size than the Chánggrá, and has a different habitat, with great general similarity of structure and appearance, yet not wanting points of diversity. The ears of the Chyápú are invariably smaller, and less pendant than those of the Chánggrá; and what is very deserving of attention the feet pits are not constant in the Chyápú, but are occasionally wanting, as in the Dúgú, a species presently to be described. In the majority of the goats of these regions, the feet pits are present in the anteal extremities without variation: but they are sometimes wholly wanting in all 4 feet of the Chyápú and Sínál; frequently so in all 4 of the Dúgú; and hence we may learn that this mark is more normal in the sheep than in the goats, and that it has a strong tendency to obliteration in the latter. The Chyápú is further distinguished from the Chánggrá by the very various flexure of the horns of the former, which are sometimes erect and sometimes curved backwards in the sickle style; sometimes spirally twisted and sometimes not so; and, again, the ears of the Chyápú, always short as compared with those of the Chánggrá, are occasionally so in the extreme, bearing the turncated appearance of the same organs in the Barwál.

* I have taken all possible pains to determine this point, and am fully aware that the statement of the text conflicts with received opinions.



CAPRA CHAPU. THE CHYAPU GOAT.



Lastly, the Chyápú is neither so frequently nor so much coloured as the Chánggrá. The Chyápú is a small breed, fully a $\frac{1}{3}$ less than the Chánggrá. It measures from snout to vent 3 to $3\frac{1}{4}$ feet, and has a medium height of $1\frac{1}{2}$ to $1\frac{3}{4}$ feet. Head straight, $7\frac{1}{2}$ inches or 10 by the curve. Tail without the hair, $3\frac{1}{2}$: with it, $6\frac{1}{2}$ inches. Ears 3 to 4 inches. Girth behind the shoulder 2 feet. Horns by the curve $1\frac{1}{4}$ to $1\frac{1}{2}$ feet. Their basal girth, 6 inches. Weight of the animal 70 to 80 lbs.

The long hair and fine sub-fleece, the ample forelock and beard common to both sexes, the sexes both horned, the invariable absence of the eye and groin pits, the feet pits present in fore feet only, the long straight face, short arched forehead, keen and saucy eye, short spare neck, long full body, low rigid limbs, short high hoofs, conic obtuse false hoofs, and short depressed tail; and, lastly, the invariable two teats, are marks alike of the Chánggrá and Chyápú. But the gay and independant look of both is augmented in the lesser breed by the finer and more mobile ear, which has all the mobility of the wild state, and is now horizontal, now erect, now forward, and anon backward, as each internal impulse or external signal may prompt.

The horns of the Chyápú, as of the Chánggrá, have all the normal characters of the genus, that is, they are inserted obliquely on the top of the head, in contact; and are directed chiefly upwards and backwards. They are keeled, sharpened to the front, widened to the back, and much more compressed than in the Chánggrá, and have a long ovoid section, and their transverse wrinkling is not nodose nor heavy nor distant, but slight and crowded, going all round pretty equally. The females are not much less than the males, nor are their horns very materially less, nor different in form. The prevalent colour is white; but some are mottled or blotched with black or with tan; and the belly and limbs and a lateral mark down the head from horns to nostrils, are often dark. So too are the ears; whilst the prevalent white colour is frequently flavescent and straw tinged.

The Chápús rut in winter and procreate in spring, gestating somewhat more than 5 months or about 160 days; and with regard to maturity, senility and death, they show little or no difference from the Chánggrás. They are of strong constitutions and hardy habits, but love cold and short aromatic pastures, and as these can be found only in the Cachar region of the cis-Himálayan mountains, to it the Chyá-

pús may be said to be confined, the immense numbers of them are imported into the central hilly region during the cold months to satisfy the flesh-loving habits of the people of that region, who also occasionally weave the long hair and fine wool of the Chyápú into appropriate manufactures, as do the Magars, Rongbos and Gúrúngs of the Cachár; and in an œconomic point of view, I apprehend, that the Chyápú not less than the Chángrá is an object well deserving the attention of all those who aspire to benefit their kind or themselves by multiplying the resources and materials of our stupendous manufacturing system.

The Chángrá and Chyápú would flourish wonderfully in the driest of our hilly counties, in Wales, England or Scotland; and the sample of Cashmeri workmanship out of the inner fleece of the Chángrá which I sent to a great house in Lancashire, was declared to be a marvel of beauty.

3. *Capra Sinál*.—The Sinál or Sinjál of the Cachar. This large and finely proportioned breed is the especial race of the Cachar, where the Chyápú, though now abounding, is, no doubt a not very remote immigrant from Tibet. But the Sinál now is, and has been for ages, proper to the more northern parts of the sub-Himálayas, including the whole of the northern region and a small part of the central region. In these latitudes the Sinál abounds from the Kali to the Trisul or from Kumoon to Nepal proper; and probably beyond these limits, both west and east, though I know it not. The Magars, Gúrúngs, and Khas too, rear the Sinál, whose ample hairy surcoat and fine sub-fleece, though both inferior to those of the Chángrá and Chyápú, are yet capable of being, and actually are, applied to the manufacture of ropes and of blankets, serges and caps, and only not more efficiently turned to œconomic uses, because the Gúrúngs alone of the above named tribes are wise enough not to affect contempt for arts mechanical; for all arts, in short, but the glorious one of war! The Sinál measures from snout to vent 4 to $4\frac{1}{4}$ feet and $2\frac{1}{4}$ to $2\frac{1}{2}$ feet high. Its head is by straight measure $9\frac{1}{2}$ to $10\frac{1}{4}$ inches, and by curve 12 to 13. Ears 6 to $6\frac{1}{4}$ inches. Tail only, $5\frac{1}{2}$ to 6. Tail and hair, 10 to 11 inches. Horns by curve $1\frac{1}{4}$ to $1\frac{1}{2}$ feet. Basal girth 5 to 7 inches. Girth of the animal behind the shoulder $2\frac{3}{4}$ to 3 feet. The Sinál is a perfectly typical goat, even more so than the Chángrá, having the horns less excessively compressed and the keel more distinct. The long face is straight.



The short forehead arched. The oblique small muzzle quite hairy and dry. The small pale eye void of any trace of eye pits below it. The largish narrow and pointed ears quite pendant. The moderately compressed horns set on with the full usual obliquity on the top of the head and in contact at their sharp keeled anterior edge, but separate and rounded behind, with an ovoid section and medial uniform wrinkling that is carried $\frac{2}{3}$ towards the flat smooth tips. The direction of the horns is upwards and outwards with great divergency for a goat, and a single lax spiral turn leaving the points directed upwards and a little backwards. The neck is spare. The body long yet compact. The limbs sufficiently elevated, stout and rigid, and like the body, though of course in less degree, showing all the usual tendency to excessive-hairiness. The hoofs short, high, with rigid pasterns and large conic false hoofs. Feet pits in fore feet only or in neither: and medial conico-depressed tail carried curvately erected by the males who, as well as the females, have an ample beard and a moderate forelock. Teats two, as in all the rest. Females smaller but horned; the horns smaller and scarcely spirated. Colours white, or black, or brown, with white or fawn face and limbs; pure white being rarer than in any of the foregone by much. The Sinál is seldom seen out of his own district, being perhaps less patient of change than the Chánggrá or Chyápú, and for foreign exportation inferior to either of them, as well owing to this inferior hardihood, as to the smaller quantity and coarser quality of the fine sub-fleece. The mutton is good and the flesh of the kids greatly and justly prized, being far superior to that of lambs of any breed; and the milk alsó, like that of the other goats, is greatly and justly esteemed. The Sináls rut in autumn and procreate in spring, the females gestating upwards of 5 months, as I am positively assured, and as is true of the Ibexes, but not supposed to be so of the *Ægagri* or of the tame goats.*

Intestines 72 feet whereof the small are 53 and the great 19 feet. Cæcum 12 inches long by 3 wide. Great gut near it 2 inches wide. Another male. Intestines 78 feet, whereof small 59, and great 19 feet.

* See and compare general Zoology II. p. 373 and English Regnè Animal IV. pp. 298 and 301. That points like this should be subject to doubt may show the ordinary observer how much he has it in his power to do by merely using his opportunities of observation in India.

Cæcum 12 inches by 3. Knees and chest nude and callous. Sub-fleece frequently wanting. Almost always so in summer.

4. *Capra Dágú*.—The Dágú. This is the Goat of the central region of the sub-Himálayas. But the remark applied to this region in reference to the sheep holds almost equally good as to the goats. In fact the central and lower regions of the sub-Himálayas are unsuited to goats or sheep owing to their rank pasture, excessive moisture and enormous superabundance of leeches and other parasitic creatures generated by heat and moisture amid a luxuriant vegetation. The Dágú is bred only in small numbers by householders—and only for home consumption of the milk and flesh, both of which are excellent and eagerly consumed by the highest castes. The Dágú extremely resembles, and is probably identical with, the ordinary domestic goat of the lower provinces, that of the upper provinces—viz. the large gaunt Roman-nosed, monstrous-eared Jamnapári—being unknown to these mountains, and unable to endure their climate in any part. The Jamnapári (*Capra Jamnapária*) becomes in the mountains goitrous, casts its young prematurely, breeds not, and hardly exists. But the little goat of moist Bengal does very well in the moist climate of the central and lower hills; and accordingly, I believe, that as the upper region of the hills is indebted to Tibet for its goats, so the central and lower regions are indebted to Bengal and Behar for theirs,* and that the animal we are now to describe is at least, in origin, the common domestic Goat of the Gangetic provinces, from Allahabad to Calcutta nearly.

The Dágú of the central or lower regions of the hills is distinguished from all the breeds of Tibet and of the Cachar by the frequent absence, in the females particularly, of the long hair, and the nearly as frequent absence of the interdigital pits, belonging to those races or breeds. The males however of the Dágú breed are often as shaggy as the Chángrá or Sinál; whilst in the latter species, as we have seen, the feet pits are not invariable. Upon the whole, “feet pits in the fore feet only or none” seems to be the proper generic formula quoad this organ; whilst long or short hair can be admitted only as a very subordinate character; and with those exceptions, the Dágú is thoroughly

* F. Cuvier's notices of Nepalese goats are altogether apochryphal, though copied au pied de la lettre by the English Editors of the *Regnè Animal and Natural Library*. The exotics of the Residency have become Nepal species, and the poor Jamnapari which we tried so vainly to acclimatise, figures as *the Nepal Goat!!!*

conformable both in essential and in subordinate points to the characters we have called generic, and as such placed at the head of our paper; so that, as has been already remarked, domestication would seem to have produced much less impression on the primitive goat, as typed by *Egagrus* than on the primitive sheep as typed by Ammon.

The *Dúgú* measures from snout to rump $3\frac{3}{4}$ to 4 feet and about 2 feet in height. Head by the curve 11 to $11\frac{1}{2}$, straight 9 to 10 inches. Tail only 5. Tail and hair $8\frac{1}{2}$. Ears $5\frac{1}{2}$ to 6 inches. Horns by curve 14 to 16. Their Basal periphery 6 to 7. Girth of chest 2 to $2\frac{1}{4}$ feet. The *Dúgú* is of medial size and well proportioned, the male being much larger than the female, and frequently shaggy, whilst she is always smooth. There is no sub-fleece and the hair is coarse and turned to no use, the skin only being of value when the flesh is disposed of, and the skin but rarely and unskilfully turned to use. The muzzle of the *Dúgú* is dry and hairy: the face unarched: the forehead considerably so: the ears largish and horizontal or pendant: the moderate horns turn up simply backwards, without spiral twist and with but a vague keel, though it be traceable enough in the antea sharp edge: the neck spare: the body longish yet full: the rigid limbs nor short nor long, with high short hoofs and conic false hoofs: and, lastly, medial tail, depressed and nude below and curvately raised in the males. The eye pits and muffle and groin pits are as invariably absent as in the other breeds; and the feet pits more frequently wanting than in any. The beard is ample in both sexes, and the females always have horns and two teats; and their hair is close and smooth. Intestines 93-7, whereof the small are 70 and the great 23 feet 7 inches. Cæcum 13 inches by 4. Another 108 feet, whereof small are 82, and great 26 feet, and the Cæcum 3 feet! The *Dúgú* breeds all the year round, but most young are produced at the close of the rains in autumn, being begotten in spring. Two are frequent at a birth, and two births in a year have been heard of; but most rarely, and well may be so, if it be true, as insisted on to me, that this breed likewise gestates above 5 months or 160 days.*

And now, before concluding this long paper, I will take leave to remark, that the facts so carefully amassed, the fruit of years of patient

* For the period of Caprial gestation see Penny Magazine sub voce, as well as the General Zoology and Regnè Animal as quoted supra.

observation, should serve, not merely to illustrate the essential characters of two groups of animals heretofore ill discriminated, but should also throw much light on those interesting questions, the effects of domestication and of climate upon the natural organisation, and the natural habits and range of species, subjects of high interest, no doubt, though a degree of ridicule has been cast upon them by the pompous dissertations of those who were at as little pains accurately to determine the geographical as the Zoological data disserted upon.

*Illustrations.**

1. The Silingia Sheep.
2. The Barwál Sheep.
3. The Cágiá Sheep.
4. The Dúmba variety of the Púchiá Sheep or of common breed of Gangetic provinces.
5. The Chyápú Goat.
6. The Sinál Goat.
7. Feet pits of sheep and of goats, and heads of Barwál and Silingiá Sheep.

All figured for the first time and from nature.

CATALOGUE OF REPTILES

Inhabiting the MALAYAN PENINSULA and ISLANDS,

*Collected or observed by THEODORE CANTOR, Esq., M. D., Bengal.
Medical Service.*

(Concluded from No. CLXXXI.)

VENOMOUS SERPENTS.

FAM. VIPERIDÆ, BONAPARTE.

SUB-FAM. BUNGARINÆ, Bonaparte.

TERRESTRIAL.

GEN. ELAPS, *Schneider.*

Head more or less indistinct, neck not dilatable; mouth and eyes small, trunk elongated, throughout of nearly equal circumference, very smooth; tail short, tapering, beneath with scutella.

* For the accompanying illustrations the Editors are indebted to the liberality of James Hume, Esq., at whose lithographic press they were executed.—Eds.